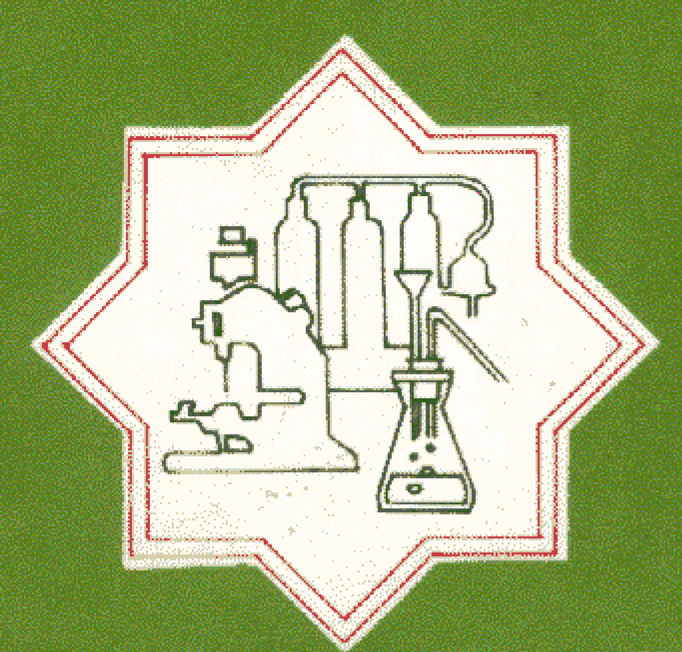
A. R. E.
Ministry of Waqfs
The Supreme Council for Islamic Affairs

ISLAM AND SCIENCE
— 2 —

by
Prof. Dr. M. G. El-Fandy
Head of the Committee of Experts.



CAIRO 1414 — 1993

Under the Supervision of:
Dr. Muhammad Ali Mahgoub

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2

IN THE NAME OF ALLAH

AL-RAHMAN (THE BENEFICENT)

AL-RAHIM (THE MERCIFUL)

PREFACE

Part -1- of this series (Islam and Science) is a trial to make it clear that a great number of the Quranic verses are cosmic verses revealing the signs of the All-knowing Almighty Creator in the universe and the close relation between natural science and the message of Islam.

In the present work [Part -2-], an attempt has been made to show that what the reader may gain through divine inspiration and through logical mental judgement are, in Islam, the proper channels leading to «faith».

MATERIALISM

Materialism in the common sense means non belief in Allah as Creator of the material universe. Some materialists relate creation to what they refer to as mere «accident» !

Needless to say that our belief in Allah, the Creator, means mainly to made us go, through the various fields of life and capabilities, in some way as Allah does in dealing with the universe, such as knowledge, perfection, justice.. :

«And Allah has the magnificent names so invoke Him by them...» — Al-Araf — (180).

(ولله الاسماء الحسنى فادعوه بها) .
ـ الاعراف ـ أ ١٨٠) .

Amongst these names as given by the Quran (99 names) are :

1. **Al-Khabeer** [The All-Cognizant]

The name means that Allah possesses all knowledge and adeptness. It designates the encompassing of all peculiarities of things as well as their revealed characteristics.

2. **Al-Haleem** [The Patient]

The name means that Allah is neither provoked to administer justice or inflict immediate revenge or

punishment, nor to restrain the exercise of forbearance and charity against those who sin and disobey His commands, though He is infinitely capable of penalizing the offenders.

3. **Al-Kareem** [The Bounteous]

Allah grants pardon instead of just retribution. He extends refuge to all who seek Him.

4. **Al-Mogeeb** [The Responder]

In need one can find the response of Allah in various ways : a. By answering prayers. b. By giving aids and solutions. c. By providing sufficiency to the needy. d. He may offer enlightenments before invocation and grace before appellation.

The censured and spiteful meaning of «materialism» is to believe that nothing exists beyond the material structure of the universe. This means that something, properly governed by fixed physical laws, can be brought into existence by absolutely nothing at the very beginning ! Surely within the material structure of the universe, matter itself occupies the place where our hands and minds can meet the Creator (Allah).

The censured meaning of «materialism», which we bear in our minds, acquires disgusting significance and repulsive in the moral and intellectual aspects, and has to be acquitted.

Indeed man, according to his inner desire, exerts himself in being fond of material things, appropriating

them and keeping them and their profits for himself only, to the extent that he may forget honour, duty, ... and forgets the fact that beyond this Earthly life there will be another life. If he does not care for any of the pleasures of the Earthly life he will have much bteter compensation in the other life. He will not be covetous and humiliated by his cupidity.

Commendable materialism, therefore, is ready to welcome the Creator's makings in the material structure of the universe. It uncovers the secrets of that structure which are signs (or Ayat of the Creator). It also uncovers the laws of nature which are fixed along space and time, and also the so-called mechanical powers. It benefits from exploring the unknown and hidden horizons, and thus sees the Creator everywhere and in every thing.

In this way one realizes that the material objects are nothing but the very first grasping of mental (facts) which pave the way to the realization of the spiritual facts and the supreme values beyond matter. In such respects the Holy Qurân says for example :

1. «Assuredly, in the Heavens and the Earth are signs for the believers; and in the creation of yourselves and the living beings He disperses on Earth are signs to the firm in faith; and in the variation of night and day and the sustenance which Allah sends down from the sky, whereby He gives life to the Earth after its death, and in sending winds in their ways are signs for a people of discernment. These are the signs of Allah; We rightfully recite them for you: but say, with what sort

of speech beyond that of Allah and His signs they believe ? » — **Al Jathiya** — (2-6).

ان فى السـماوات والارض لآيـات للمؤمنين . وفى خلقكم وما يبث من دابة آية لقـوم يوقنون . واختـلاف الليل والنهار وما انزل الله من السماء من رزق فأحيا به الارض بعـد موتهـا وتصريف الرياح آيات لقوم يعقلون . تلك آيات الله نتلوها عليك بالحق فبأى حديث بعد الله وآياته يؤمنون) .

ــ الجاثية ــ (٢ ــ ٦) .

2. «Surely, in the creation of the Heavens and the Earth and the variation of night and day and in the boats that sail swiftly over the sea thus benefitting people and in the water which Allah precipitates down from the sky whereby He gives life to the Earth after its death and disperses various living creatures and in sending winds in their ways and the clouds compelled between the sky and the Earth, there are signs for a people who are wise». — **Al-Bakara** — (164).

(أن فى خلق السماوات والارض واختلاف الليـل والنهار والفلك التى تجرى فى البحر بما ينفع الناس وما أنزل الله من السماء من ماء فأحيا به الارض بعد موتها وبث فيها من كل دابة وتصريف الرياح والسحاب المسخر بين السماء والارض لآيات لقوم يعقلون) .

ــ البقرة ــ (١٦٤)

3. «Say : go and travel through the Earth and see how Allah did originate creation.» — **Al-Ankabout** — (20).

« قل سيروا فى الارض فانظروا كيف بدأ الخلق » .

ــ العنكبوت ــ (٢٠) .

4. «And We send the winds seeding the clouds and thereby cause water to precipitate down from the sky thus providing you with it to drink. You are not the owners of its stores.» — **Al-Hijr** — (22).

« وارسلنا الرياح لواقح فانزلنا من السماء ماء فاسقيناكموه وما انتم له بخازنين » .

ـ الحجر ـ (٢٢) .

5. «And We sent down water from the Heavens according to a precise measure, thereby caused the Earth to hold it ...». — **Al-Mouminoun** — (18).

(وانزلنا من السماء ماء بقدر فاسكناه فى الارض ..) .

ـ المؤمنون ـ (١٨) .

More than three quarters of the Earth's surface is covered with liquid water. Add to this the huge amounts of ice covering the polar-caps and the extensive amounts of water-vapour found in the atmosphere. No other planet in our Solar System could gather comparable amounts of water. However, it is an established fact that water played the biggest rôle in the evolution, sustenance and development of life on Earth.

6. «And of His signs is the creation of the Heavens and the Earth and all what He spread forth in both of them of living beings. Indeed He is fully capable of gathering them together when He wills.» — **Al-Shoora** — (29).

(ومن آياته خلق السماوات والارض وما بث فيهما من دابة وهو على جمعهم اذا يشاء قدير) .

ـ الشورى ـ (٢٩) .

There is no acceptable reason to suppose that our Earth is the only inhabitable planet in the entire universe. The theory of probability tells us that in our own galaxy (the Milky Way) there are about two million planets which can support life and may be inhabited.

7. «Indeed I could swear by the sites of the stars and it is a great oath if you are aware of them.» — **Al-Wakiaa** — (75).

(فلا أقسم بمواقع النجوم وانه لقسم لو تعلمون عظيم) .

ـ الواقعة ـ (٧٥) .

The material universe is a universe of galaxies, made of billions and billions of galaxies. The nearest galaxy to our own galaxy is called Andromeda. Its site is about 750 thousand light years afar. Recently the so-called quasars have been discovered at sites greater than 10 billion light years afar !

— One light year equals the distance which light traverses in one year with its velocity which is equal to 3×10^{10} cm/sec. — ! !

8. «With power and skill did We construct the Heavens and indeed We are expanding them». — **Al-Zariyat** — (47).

(والسماء بنيناها بأيد وانا لموسعون) .

ـ الذاريات ـ (٤٧) .

It is only lately in the Age of Science that it has been discovered that the universe is expanding. Its galaxies are receding with velocities which are increas-

ing with time. This result has been supported by actual observations as well as theoretically according to the Theory of Relativity ! !

9. «And that whom His will is to leave straying He makes his heart close and constricted as if he has to rise up in the sky». — **Al-Anaam** — (125).

(ومن يرد أن يضله يجعل صدره ضيقا حرجا كأنما يصعد في السماء) .

ـ الانعام ـ (١٢٥) .

Atmospheric pressure, and consequently oxygen amounts in the air, decrease rapidly with increasing height above the Earth's surface (and M.S.L. generally). The table shows the variation of pressure (and hence oxygen amounts) with height.

Height above M.S.L. in m.	Atmospheric Pressure m.b.
0,000	1,000
1,500	850
3,000	750
6,000	500
10,000	300
12,000	200

Evidently at 12,000 m. the atmospheric pressure and hence oxygen amount in the air decrease to one fifth of their values at M.S.L. For this reason one feels the need to a wider breast in order to inhale greater amounts of air (and hence of oxygen) as he rises up in the sky without outer protection.

10. «... He maketh night to spherically succeed day and He maketh day to spherically succeed night ...»

— **Al-Zomar** — (5).

﴿ ... يكور الليل على النهار ويكور النهار على الليل ...

ـ الزمر ـ (٥) .

The Holy Qurân has its own way and merit in quoting miraculously scientific (facts). It avoids direct statements which permit and afford opportunity for non-believers, and infidels to deny it in the light of their old non-scientific knowledge (before the age of Science). Long before the age of science most people regarded the Earth's surface flat as it appeared to them. That the Earth is round and rotates are an example. The Holy Qurân mentions these two facts indirectly in several verses. One of such verses is number (10) above. The verse points to the actual shape of the lowest layer of the atmosphere in which day and night succeed one another, and regards them spherical (shells as we know them now !). Evidently, this could be realized only if the Earth is round and rotates in front of the Sun.

Another verse says :

«... Our command (the last day) comes to Earth by night* and by day ..». — Younos — (24).

(... اتاها أمرنا ليلا او نهارا ...)

— يونس — (٢٤) .

A third verse says :

«And a sign to them is the night : When We draw from it the day, they become in darkness». — Yasin — (37).

(وآية لهم الليل نسلخ منه النهار فاذاهم مظلمون) .

— يس — (٣٧) .

Evidently, daylight is due to the scattering of sunlight on the surface air-layer facing the Sun.

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* Only half of the Earth's surface can be in daylight.

WHY ISLAM

The Holy Qurân (and hence Islam) raises the human mind up to the highest rank, and regards it responsible for almost all human deeds whether good or evil :

«And they (the infidels) uttered : Had we been not heedless of listcning (to the Qurân) or had we been wise, we could escape being with those driven to the torment of fire.» — **Al-Mulk** — (10).

(وقالوا لو كنا نسمع او نعقل ما كنا فى أصحاب السعير) .
ـ الملك ـ (١٠) .

«But it (the Qurân) is clear signs in the hearts of those whom the knowledge has reached». — **Al-Ankaboot** — (49).

(بل هو آيات بينات فى صدور الذين أوتوا العلم) .
ـ العنكبوت ـ (٤٩).

Again, science is the product of the human mind. By adopting scientific methods we are able to uncover the hidden signs of the Creator and discover His attributes in the material universe, an outstanding step forward towards becoming believers. In fact, science alone is insufficient in order that one might become a proper believer. This is also true for conscience alone. For

this reason Allah did send prophets each now and then in succession to various nations, until finally when the human mind became almost ripe and the Age of Science was on doors, Muhammad was sent by Allah to the whole world (the human race).

Islam regards this world as a productive farm or field for good work for the sake of improving and benefitting Earthly life, as well as ensuring happiness in the hereafter. Man's good or evil deeds in this life can never be lost or go in vain. Islam assures us that good work in the world is the means of securing happiness in the hereafter, as well as success in this world. In addition, the Muslim's conscience fears Allah's punishment Who says :

«On that Day man shall be told his former deeds and his latter. Nay, man shall be a clear proof against himself even though he offers his excuses.» — **Al-Kiama** — **(13-15)**.

(ينبؤ الانسان يومئذ بما قدم واخر . بل الانسان على نفسه بصيرة . ولو القى معاذيره .)

ــ القيامة ــ (١٣ ــ ١٥) .

«The Day every soul shall find what it did of good has been brought forward, and what it did of evil it will wish if there were between it and that Day a far epoch of time. Allah warns you, so beware of Him. Surely Allah is merciful to His worshippers.» — **Al-Imran** — (30).

(يوم تجد كل نفس ما عملت من خير محضرا وما عملت من سوء تود لو أن بينها وبينه أمدا بعيدا ويحذركم الله نفسه والله رؤوف بالعبـاد) .

ـ آل عمران ـ (٣٠) .

Islam, obviously, goes further as it regards life on Earth and life in the hereafter belong to one and the same soul, which means that life in the latter is a continuation to life in the former :

«And those who have earned evil will have a reward of like evil...». — **Younus** — (27)

(والذين كسبوا السيئات جزاء سيئة بمثلها .) .

ـ يونس ـ (٢٧) .

«In the long run, evil in the extreme will be the end of those who do evil ...». — **Al-Room** — (10).

(ثم كان عاقبة الذين اساءوا السوء . .) .

ـ الروم ـ (١٠) .

«... Do you receive a reward other than that which you have earned by your deeds ? » — **Al-Naml** — (90).

(هل تجزون الا ما كنتم تعملون .)

ـ النمل ـ (٩٠) .

It is worth mentioning at this stage that with regard to what we have said about Islam and work, one should not jump into conclusion that muslims have to regard this world as a prison or abode of torture or suffering. Surely Allah made life on Earth a mixture of pleasures and pains, but the formers overcome and exceed the latters. In this manner the world is nothing but an abode fit for being a temporary house of test :

«Say, who has forbidden the ornaments of Allah which He brought forth for His worshippers and the good things of His providing ? » — **Al-Araf** — (32).

(قل من حرم زينة الله التى أخرج لعباده والطيبـــات من الرزق) .

ــ الاعراف ــ (٣٢) .

«We try you with evil and good for a test and unto Us you will be returned.» — **Al-Anbiaa** — (35).

ونبلوكم بالشر والخير فتنة والينا ترجعون) .

ــ الانبياء ــ (٣٥) .

Allah also forgives those who after doing evils, repent and stop doing evil, follow the righteous way and ask Him forgiveness :

«And ask forgiveness of your master, (Allah), then repent to Him, and He will give you far enjoyment unto a term stated, and He will give of His bounty to every man of grace ...». — **Hood** — (3).

(وان استغفروا ربكم ثم توبوا اليه يمتعكم متاعا حسنا الى أجل مسمى ويؤت كل ذى فضل فضله ..) .

ــ هود ــ (٣) .

Islam also gives worship of Allah special significance and facilitates it to a great extent. Its essence in the comprehension of Allah's impression is on every thing : nature, life and soul. It means Him in every sort of our acts : working, studying, suffering ... No one whatever deserves worshipping save Allah to whom the like is not :

«And they worship others than Allah such as have no power of providing them for sustenance with any thing from Heavens and the Earth and can not acquire such power.» — **Al-Nahl** — (73).

(ويعبدون من دون الله مالا يملك لهم رزقا من السماء والارض شيئا ولا يستطيعون)

ـ النحل ـ (٧٣) .

«Allah forgiveth not that partners should be set up with Him, but He forgiveth anything else, to Whom He pleaseth ...» — **Al-Nisaa** — (48)

(ان الله لا يغفر ان يشرك به ويغفر مادون ذلك لمن يشاء) .
ـ النساء ـ (٤٨) .

«... And who assigns partners to Allah he is as if he had fallen from heaven and been snatched up by birds, or the wind drops him into a far place». — **Al-Haj** — (31).

(... ومن يشرك بالله فكأنما خر من السماء فتخطفه الطير او تهوى به الريح فى مكان سحيق) .

ـ الحج ـ (٣١) .

«And the unbelievers their deeds are like mirage in a sandy desert, which the (man) parched with thirst mistakes for water, and when he comes unto it he finds it to be nothing, and finds Allah therein..» — **Al-Noor** — (39).

« والذين كفروا اعمالهم كسراب بقيعة يحسبه الظمآن ماء حتى اذا جاءه لم يجده شيئا ووجد الله عنده ...) .

ـ النور ـ (٣٩) .

Finally, amongst the most significant axioms of Islam is that it refuses entirely any differentiation between the people regarding colour, race, sex ... and the like. Surely Allah uses one and the same measure to judge all the people. We read in the Holy Qurân Allah's saying :

1. «Surely, those who believe (the Muslims) and those who follow the Jewish (Scriptures) and the Sabians and the Christians, any who believe in Allah and the Last Day and work righteousness shall have their reward with their Master : On them shall be no fear, nor shall they grieve.» — Al-Maida — (69).

(ان الذين آمنوا والذين هادوا والصابئون والنصارى من آمن بالله واليوم الآخر وعمل صالحا فلا خوف عليهم ولا هم يحزنون).

ـ المائدة ـ (٦٩) .

2. «O mankind ! We created you from a single (pair) of a male and a female, and made you into nations and tribes that you may know each other. Verily the most honoured of you in the sight of Allah is (he who is) the most righteous of you ...». — Al-Hojurat — (13).

(يأيها الناس انا خلقناكم من ذكر وانثى وجعلناكم شعوبا وقبائل لتعارفوا ان اكرمكم عند الله أتقاكم ...) .

ـ الحجرات ـ (١٣) .

3. «The same religion has He established for you as that which He enjoined on Nooh, the which We have sent by inspiration to thee, and that which We enjoined on Abraham, Moses and Jesus : Namely, that you should

remain steadfast in religion and make no divisions therein : To those who worship other (things) than Allah, hard is the (way) to which thou callest them ...».
— Al-Shoora — (13).

(شرع لكم من الدين ماوصى به نوحا والذى أوحينا اليك وما وصينا به ابراهيم وموسى وعيسى ان اقيموا الدين ولا تتفرقوا فيه كبر على المشركين ما تدعوهم اليه . .)

ـ الشورى ـ (١٣) .

ALLAH

No doubt, the reader has noticed that in this book Allah's names are written according to their pronunciation in Arabic. For sure, such names are not subject to translation.

It is known that the prophets had been supported by Allah by means of miracles suitable for their occasions. Naturally, the last prophet, — Muhammad — Allah's peace and blessing be upon him, had to be supported mainly by a unique miracle of eternal character, whose miraculous achievements could remain a guide for all the subsequent generations. This living unique eternal miracle is the Holy Qurân.

In the present book [Part 2], we proceed to show how in our age [The Age of Science], the Qurân still remains Allah's portent to mankind. The validity of this statement lies behind the fact that the Holy Qurân did state numerous important and outstanding scientific (facts) and achievements which have been discovered and accomplished only recently. In fact, scientific knowledge is also regarded to be amongst the message of the Holy Qurân which says :

1. «Verily in the creation of the Heavens and of the Earth, and in the variation of night and day, are

signs for those of understanding minds.» — Al-Imran — (190).

« ان فى خلق السموات والارض واختلاف الليل والنهار لآيات لاولى الالباب » .

— آل عمران — (١٩٠) .

2. «Nay, it is clear signs in the hearts of those whom the knowledge has reached ...». — Al-Ankabut — (49).

« بل هو، آيات بينات فى صدور الذين أوتوا العلم .. »
— العنكبوت — (٢٤٩)

3. «... Allah has not created all this but for the truth. **He makes His signs clear to those who acquire** the **knowledge.» — Yunus — (5)**

(... ما خلق الله ذلك الا بالحق يفصل الآيات لقوم يعلمون
— يونس — (٥) .

4. «... Those who muse on the creation of the Heavens and of Earth : 'O our Master' ! say they, 'You have not created this in vain; glory be to You' ...» — Al-Imran — (191).

« ... ويتفكرون فى خلق السماوات والارض ربنا ما خلقت هذا باطلا سبحانك » ..

— آل عمران — (١٩١) .

In the present era of civilization scientists could not escape **admitting the fact that the universe passes** through **the phase of a perfect system. Natural pheno-**menae, **for example, are governed by (fixed) physical** laws, **which do not change with space or time, thus**

making the development and progress of science possible.

Obviously, these features of the universe could not be realized by more chance, but only through the will and supreme wisdom of a creator whose ability and knowledge are unlimited. Allah says :

«We shall show them our portents in the horizons[1] and within themselves until it will be manifested unto them that it[2] is the truth ... — **Fussilut** — (53).

« سنريهم آياتنا فى الافاق وفى أنفسهم حتى يتبين لهم انه الحق ... » .

ـ فصلت ـ (٥٣) .

However, muslims believe that (while the universe is the «Visible Book of Allah», the Holy Qurân remains the «Readable Book of Allah».

Muslims also witness that faith is a natural phenomenon, while disbelief is an abnormality which does not match with the nature of human life and natural phenomenae.

However, the question : «Why man should believe in Allah» is one of three hypotheses :

1) A god capable of doing everything and yet created nothing.

2) A god who creates another god who shares with him all the qualities of perfection.

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(1) Or on a large scale and wide scope.

(2) The Holy Qurân.

3) A god who creates a limited universe, with the imperfection characterizing every limited object. Obviously, the third hypothesis is the only natural one.

Indeed man has a positive consciousness of his own existence and of his intrinsic reality, and he is not devoid of a positive awareness of the Great Omnipresent and the Cosmic Reality, connected with that existence and even guarding it.

To Aristotle and similar philosophers, the existence of God is not a question of divinity on which there is difference between affirmation and negation similar to the difference between guidance and error. It is rather a rational truth like geometrical corollaries by means of which — for example — the forms and motion of stars and heavens were depicted.

In fact, studies conducted by faithful philosophers have culminated in different evidences proving the existence of Allah through argument and logic. One would like to put such evidences in their proper place when one decides in their context the least doubtful and disputable fact that some evidences may not stand without the cosmic consciousness in approximating belief in Allah to the feeling of religious creed.

It is clear, however, that sense, rational and conscious, becomes of good nature when based on belief in Allah. This genuine faith is the best interpretation of the secret of creation. It is understood by the believer, adopted by the good thinker and followed by the sane.

Again, we can not accept the presumption about the spontaneous emergence of the universe. Such an argument would be nonsense. Scientifically speaking, the universe emerged at a fixed moment in the past, which means that it had a start-point, and is not infinite in time. Thus, it ought to have been created by a Maker.

If we assume that this Maker was of the same type or nature of the universe itself, such a supposition would be a sort of nonsense, leading to the same problem for which we want to find a solution ! Thus, there is no way for solving this problem other than to acknowledge that the Maker (the Great Omnipresent) must differ from the universe in every thing or respect. As stated above, since the universe had a start in time, and will come to an end, the Maker must have neither of the two.

As a matter of fact, one has to reject foolish questions, and asking, say, who created Allah is only a foolish question. It is, in fact, a false question logically, because it is based on the false assumption that in the very beginning since infinite time ago, there was nothing in existence ! But is it wise to accept that nothing can yield something ? Our material universe in which we exist must logically have had a creator whose existence extends to infinity in time and whose power is unlimited. This we call Allah, and in this sense we read in the Holy Qurân :

«... Nought is there like Him ! the Hearer, the Beholder He». — **Al-Shura** — (11).

(... ليس كمثله شيء وهو السميع البصير) .

ـ الشورى ـ (١١) .

«... Is it not enough for you that your Master is witness to all things ? » — **Fussilut** — (53).

(.. أو لم يكف بربك انه على كل شيء شهيد) .

ـ فصلت ـ (٥٣) .

«Were they created by nothing ? or were they the creators (of themselves) ?. Or did they create the Heavens and the Earth ? Nay, they are not aware of Allah». — **Al-Toor** — (35), (36).

(أم خلقوا من غير شيء أم هم الخالقون . أم خلقوا السموات والارض بل لا يوقنون .) .

ـ الطور ـ (٣٥) و (٣٦) .

«That is Allah your Master, Creator of everything; no god is there but He ...». — **Ghafir** — (62).

(ذلكم الله ربكم خالق كل شيء لا اله الا هو ...) .

ـ غافر ـ (٦٢) .

Unto Allah only are attributed eternity and perpetuity ; «He is the First and the Last, the Evident and the Immanent, and He has full knowledge of all things.» — **Al-Hadeed** — (3).

(هو الاول والاخر والظاهر والباطن وهو بكل شيء عليم) .

ـ الحديد ـ (٣) .

«There is no god but He : That is the witness of Allah, the Angels and those endued with knowledge, standing firm on justice.» — Al-Imran — (18).

(شهد الله انه لا اله الا هو والملائكة واولوا العلم قائمـــا بالقسط) .

ـ آل عمران ـ (١٨)

MODERN SCIENCE

The Holy Writ welcomes knowledge on sound basis: «Say : Bring forth your proof, provided you are right». — **Al-Bakara** — (111).

(قل هاتوا برهانكم ان كنتم صادقين) .

ـ البقرة ـ (١١١) .

It sets before science the clues and encourages attaining wider and wider scopes :

«And say (asking Allah) : O my Master, I beg for increasing my knowledge.» — **Taha** — (114).

(وقل رب زدني علما) .

ـ طه ـ (١١٤) .

Modern science concentrates on the study and utilisation of the inherent energy and potentialities of material things, ignoring entirely the study of their essence of the spiritual values. For example, modern science cannot yet explain the essence of electricity in as much as it has succeeded in making use of it. The function of science now is mainly to utilise the inherent power of things without searching for the manner of their creation, their essence or their creator. This obviously does not lead to metaphysics. The Holy Qurân, however, urges us towards studying these things in order

to see the preciseness and perfection which make us realize that there exist a Designing Creator behind everything.

Whatever progress science may achieve, it will never be able to overcome death; and however, society may advance, it will never remove from the hearts of men all the seeds of evil. It is none but Allah Who can make man's life — despite death and evil — a bliss which man accepts from Allah, the Almighty, with thanks and obedience. «O man ! what has turned you away from your master, the most beneficent ? He Who created you in due proportion and gave you proper stature. In whatever form He wills does He put you together ? » — **Al-Infitar — (6-8).**

« يأيها الانسان ما غرك بربك الكريم . الذى خلقك فسواك فعدلك . في أى صورة ماشاء ركبك) .

ــ الانفطار ــ (٦ ــ ٨) .

«Indeed We have put forth for people in this Qurân every sort of Parable in order that they may receive admonition.» — **Al-Zumar** — (23).

« ولقد ضربنا للناس فى هذا القرآن من كل مثل لعلهم يتقون »

ــ الزمر ــ (٢٧) .

«See you not that Allah sends down water from the sky and then by it We cause the upgrowth of fruits of various types and colour and that of the mountains are tracts white and red of various grades and shades of colour and black intense masses; and of people and beasts and cattle various likewise are the kinds, but of His

servants who fear Allah are only those possessed of knowledge, verily Allah is Mighty, all-Forgiving.» — Fatir — (27).

« ألم تر ان الله أنزل من السماء ماء فأخرجنا به ثمرات مختلفا ألوانها ومن الجبال جـــدد بيض وحمر مختلف الوانها وغرابيب سود . ومن الناس والدواب والانعام مختلف الوانه كذلك انما يخشى الله من عباده العلماء ان الله عزيز غفور .) .

ـ فاطر ـ (٢٧ ـ ٢٨) .

«Assuredly in the creation of the Heavens and of the Earth and in the alternation of night and day and in the ships which sail on the sea for the benefit of mankind and in the rain which Allah sends down from the sky thus giving life to the land after its death and disperses in it all types of beasts and in sending winds in their ways and in the clouds that are made to render service between the Sky and the Earth are signs for people who understand.» — **Al-Bakara** — (164)

« ان فى خلق السموات والارض واختلاف الليل والنهار والفلك التى تجرى فى البحر بما ينفع الناس وما أنزل الله من السماء من ماء فأحيا به الارض بعد موتها وبث فيها من كل دابة وتصريف الرياح والسحاب المسخر بين السماء والارض لآيات لقوم يعقلون .

ـ البقرة ـ (١٦٤) .

«We have put forth for people in this Qurân every kind of parable in order that they may receive admonition». — **Al-Zumar** — (27).

(ولقد ضربنا للناس فى هذا القــرآن من كل مثــل لعلهــم يتذكرون) .

ـ الزمر ـ (٢٧) .

The Holy Qurân comprizes the arguments and evidences on which we rely in this age of science also, in order to prove that it is a divine revelation from the All-Knowing Creator. Its inimitable elocution and teachings are conspicuous and convincing at all stages of civilization.

The Holy Qurân deals with scientific issues in about 900 verses. Most of these verses constitute as a whole the aspects of the Qurân's miraculousness that are manifested in our age in which peoples and communities believe mainly in science, as well as the strength of nations is gauged by the culture they achieve, the knowledge they acquire and the inventions they accomplish. Indeed that is one of the magnificent qualities of the Holy Qurân, the Book whose miraculousness is neither confined to a particular age nor ends at a fixed time. Now the way of ascension to Almighty Allah is itself the way of sound knowledge and true science as revealed by the study of mathematics, astronomy, physics, meteorology ... as stated before in Islam and Science[1], the very first verses in the Qurân heralded the emergence of our Age of Science and urged the search for knowledge. The reader may again ponder in Allah's saying :

«Read in the name of thy Master Who created, created man from a clot, read and thy Master is most generous, Who taught by the pen, taught man what he knew not». — **Al-Alaq** — (1-5).

(اقرا باسم ربك الذى خلق . خلق الانسان من علق . اقرأ وربك الاكرم . الذى علم بالقلم . علم الانسان مالم يعلم .) . .
ـ العلق ـ (١ ـ ٥) .

In a later stage of the revelation the Qurân, for example, asks us for travelling here and there to see how creation began. Scientifically, notably in natural history, this is, as we are aware now, in order to gather and collect various fossils, and it is accepted that the Earth's history is written within the layers of its crust.

The Holy Writ says :

«Say : Go and travel through the Earth to see how creation began.» — **Al-Ankaboot** — (20).

(قل سيروا فى الارض فانظروا كيف بدأ الخلق)
ـ العنكبوت ـ (٢٠) .

Evidently, the modern scientific method, or scheme, is based originally on careful observation, description and measurement, using our senses, notably vision. When senses fail to detect a phenomenon we use our apparatus, or our tools, as we do when studying the magnetic field for example. This means that modern science concerns apparent things only, and our minds have been prepossessed by various problems on Earth and by the laws of life, and, therefore, stopped at the limits of material life. Allah says in this respect :

«... But most people understand not. They know but the apparent (things) in the life of this world, but of the hereafter they are heedless». — **Al-Roum** — (6-7).

(... ولكن اكثر الناس لا يعلمون . يعلمون ظاهرا من الحياة الدنيا وهم عن الاخرة هم غافلون) .

ـ الروم ـ (٦ ، ٧) .

Below are two modern science examples, one meteorological about clouds and the other astronomical concerning comets. Nimbostratus clouds spread in layers (or strata). Hence the name nimbo-stratus. Clouds have the advantage that, apart from deserts, they may be observed almost daily in rainy seasons. About the nimbostratus clouds Allah says :

«Allah is He Who drives forth the winds so they raise clouds then does He spread them (in layers or strata) in the sky as He wishes and He makes them thick so that you see the rain issuing from inside them; then when He causes it to fall upon whom He pleases of His worshippers they rejoice». — **Al-Roum** (48) —

الله الذى يرسل الرياح فتثير سحابا فيبسطه فى السماء كيف يشاء ويجعله كسفا فترى الودق يخرج من خلاله فاذا أصاب به من يشاء من عباده اذا هم يستبشرون) .

ـ الروم ـ (٤٨) .

Cumulus clouds develops and grow vertically upwards and thus acquire the shape of mountains.

Rainy clouds are called nimbus clouds, and thus two types of rainy clouds arise. These are : (1) Nimbostratus clouds, and (2) Cumulo-nimbus clouds. This latter type is the only type of clouds in which hail may form and fall down. Lightning, thunderstorms and thunderbolts are also natural phenomena which arise in active cumulo-nimus clouds [Cb] only.

Hail stones differ completely from snow-flakes which fall in cold regions from nimbo-stratus clouds. Snow-flashes are formed of tiny ice crystals while hail stones fall from Cb clouds and may grow in size to attain large volumes [and may become as big as oranges].

The verse concerning the (Cb)-cloud says :

«Seest thou not that Allah drives along bits of clouds then He joins them together then makes them into heaps of cumulus (Cb) then wilt thou see rain issuing from their inside and He sends down from the sky mountain masses of cumulus wherein is hail afflicting therewith whom He pleases and turning it away from whom He pleases, the vivid flash of its lightning (whose electric charge is due to hail) almost takes away the sight». — **Al-Noor** — (verse-43)

(الم تر ان الله يزجي سحابا ثم يؤلف بينه ثم يجعله ركاما فترى الودق يخرج من خلاله وينزل من السماء من جبال فيها من برد فيصيب به من يشاء ويصرفه عن من يشاء يكاد سنا برقه يذهب بالابصار) .

ـ النور ـ (٤٣) .

Evidently, according to this verse, and in nature, the (Cb) cloud starts by the formation of bits of clouds (2 to 4 say) which join or combine together to form the growing cloud.

After being so developed, the (Cb) cloud goes through an almost well defined life cycle in about 2 hours. The earlier stages of the cycle are the growing stages, and are followed by the (hail stages) which are

characterized by down droughts, in agreement, in a miraculous way, with Allah's saying : [and He sends down from the sky mountains wherein is hail].

Lightning results from electric discharges between oppositely charged (Cb) elements, while thunder results from the sudden and extensive heating of the air in which lightning occurs. Thunderbolts are due to electric discharges between the electrically charged (Cb) elements and the Earth's surface.

The charging of the Cb elements results from charge separation associated with changes of phase involving hail as follows :

1. Positive charge is acquired by an ice crystal growing from the vapour, the corresponding negative charge being carried away on ice splinters breaking from the parent crystal.

2. Negative charge, greater in rate of production and maximum amount than in (1), is acquired by an evaporating hail element or stone, the separation being again associated with splinter formation.

3. Positive charge, much greater in rate of production and maximum amount than in (1) or (2), is acquired by a hailstone which rimes under the bombardment from supercooled droplets. Splinter formation is again involved. The electrification ceases if glazed ice instead of rime occurs on the element.

In this manner, the (Cb) elements acquire negative charge mainly where hail evaporates (near and at the

edges), and positive-charge where it rimes (central bottom). However, the Holy Qurân says in this respect :

[The vivid flash of its lightning almost takes away the sight], meaning the flash of lightning resulting from hail formation ! Is that not amazing ? Add to this the fact that those who happen to be near enough to the (Cb) cloud may lose their sight for a while ! !

As regards comets, they are members of the solar system. They travel under the sun's gravitational field in orbits that are conic sections subject to planetary perturbations. The observed orbits may be elliptical, parabolic or hyperbolic.

A comet whose orbit is an ellipse will be periodic and return to perihelion at almost regular intervals. Parabolic or hyperbolic orbits are not periodic. A comet that leaves our neighbourhood with such an orbit will leave the solar system forever. In practise, it is not difficult to distinguish between the three orbits. About three fourths of all known comets have apparently parabolic orbits, and less than twenty are known to have apparently hyperbolic orbits. About one hundred comets are known to have elliptical orbits, and many of them have been observed to return around the sun several times. Halley's comet is one of them.

This comet was noted by Halley to be periodic. He observed that the orbits of the comets of the years 1531, 1607 were identical with that of the comet of 1682. He then correctly predicted a return in 1758, but did not live to see it.

Records of the comet are available since 240 B.C. For a long period, notably in the less enlightened ages, it was credited with being the precursor of grave events Its appearance in 837 was accompanied by the fall of* Amorio, and in 1453 by the fall of Constantinople.

(١) سقطت عمورية فى يد الخليفة المعتصم عام ٢٢٣ هـ — ٨٣٧ م . وفى ذلك يقول ابو تمام قصيدة مطلعها :

السيف أصدق انباء من الكتب

فى حده الحد بين الجد واللعب

The most recent return in 1910 was an event of scientific activity. Halley's comet was seen again in the summer of 1986. It is one of about forty comets known to have periods between 10 and 1,000 years, due to their large orbits.

Like other bright comets when near to the sun, Halley's comet is observed to have a complicated structure : The head consists of a large (coma) — gases and fine particles round a nucleus and a bright (nucleus). The (tail) points away from the sun across millions of kilometers as if it sweeps the sky ! Generally, when a comet is far from the sun no tail becomes visible as it approaches Perihelion. The material of the head is volatalized by the sun's radiation, and driven away from the sun by radiation pressure. At every approach to the sun a periodic comet, such as Halleys, loses some of the material of its head.

The above almost detailed description about comets has been given in order to throw light on Allah's saying :

»Nay, indeed I could swear by the (heavenly bodies) which remain far from the sight for long periods of time and reappear running sweeping (the sky)». — Al-Taqueer — (14-15).

(فلا أقسم بالخنس . الجوار الكنس) .

ـ التكوير ـ (١٤ ـ ١٥)

Finally, it remains to prove the amazing validity of the verse given on page **(11)**, **Book (1)**, which **says** :

«And they remained in their cave three hundred years, a number which has to be increased by nine years». — **Al-Kahf** — (25).

(ولبثوا فى كهفهم ثلاث مائة سنين وازدادوا تسعا) .

ـ الكهف ـ (٢٥) .

This verse miraculously transfers 300 solar years exactly to 309 lunar years ! !

In the light of the recent careful astronomical measurements and exact estimates, it became evident that :

1. The average duration of the lunar month = 29.550329 days.

2. One solar year equals 365.2422 days, so that the total number of days in 300 solar years is :

300 × 365.2422 = 109572.66 days, and the total **number of days in 309 lunar years is :**

12 × 309 × 29.550329 = 109572.66 days.

Evidently, there are twelve lunar months in one lunar year, and the Holy Qurân says :

«For sure, the number of months (per year) as regarded by Allah, is twelve months in the Book of Allah on the day He created the Heavens and the Earth ...»
— **Al-Tawba** — (36).

(ان عدة الشهور عند الله اثنا عشر شهرا فى كتاب الله يوم خلق السموات والارض ..) .

ـ التوبة ـ (٣٦) .

References

— The Holy Quran.

— Islamic Materialism and its Dimensions. A.M. Khallaf. The Supreme Council for Islamic Affairs, 1971.

— Why I am a Believer M.G. El-Fandy. The Supreme Council for Islamic Affairs, 1972.

— Cosmic Verses in the Quran. M.G. El-Fandy. The Supreme Council for Islamic Affairs, 1961.

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